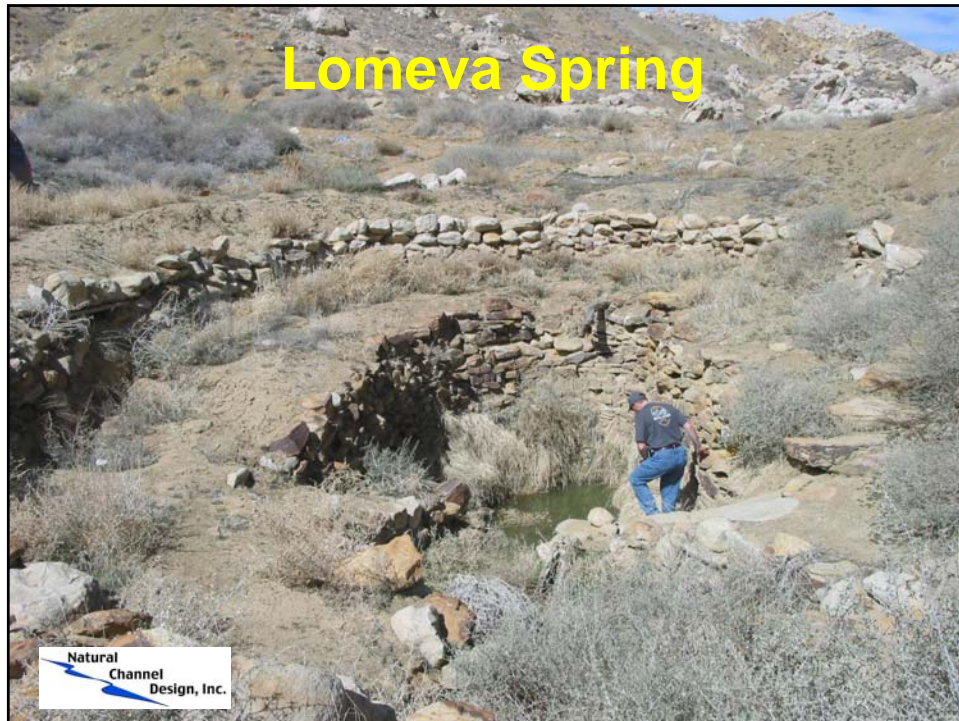


Hopi Springs Sediment Reduction Project

Jon Mason
Hopi Tribe Water Resources Program

2008 Tribal Nonpoint Source Workshop
September 23 – 24
Maricopa, Arizona





Purpose

- Lomeva Spring was regularly fouled by runoff and sediment from adjacent roads and slopes.
- Excess sediment exceeding Hopi water quality standards for Primary Ceremonial Contact and other uses of spring water.

Sediment fouled spring





Problem

- Retaining walls around spring were below grade



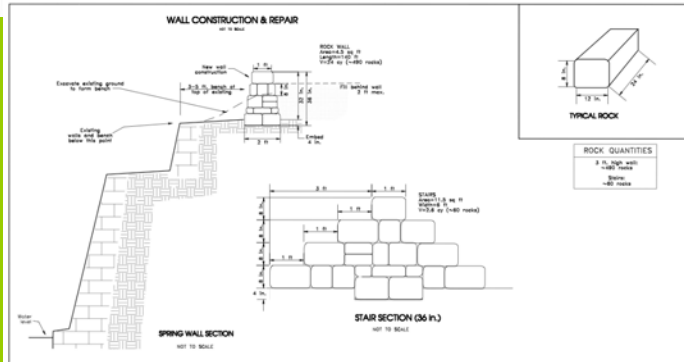
Natural
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Lomeva Spring in early 20th century



Solution

Build new retaining wall
on three sides of
Lomeva Spring



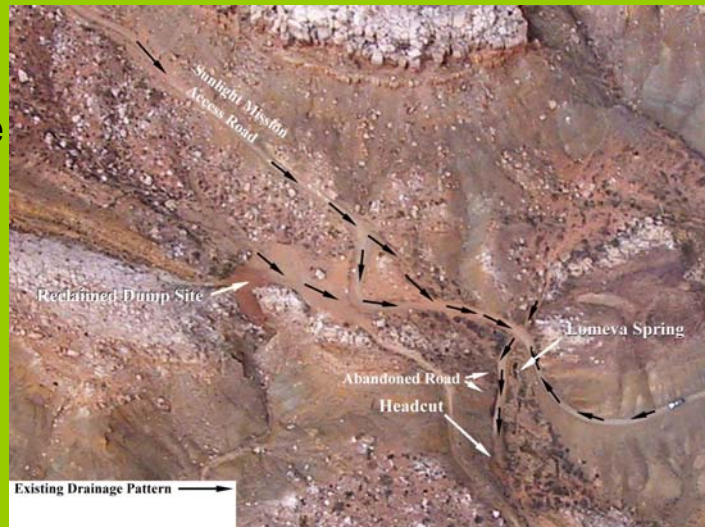
Natural
Channel
Design, Inc.





Problem

- Poor drainage routing on Sunlight Mission Road



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Solutions

Drainage provisions

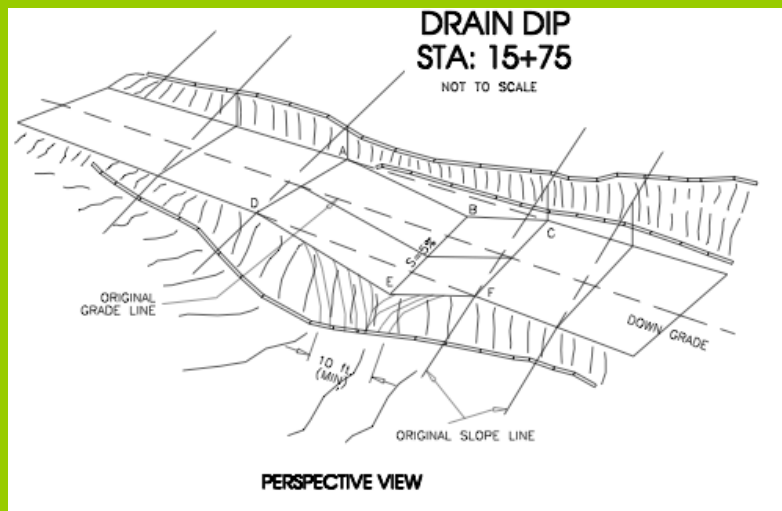
- Additional maintenance of existing culvert
- Installation of two rolling dips in portion of Sunlight Mission Road near Lomeva Spring
- Divert flow off upper portion of Sunlight Mission Road with new culvert.

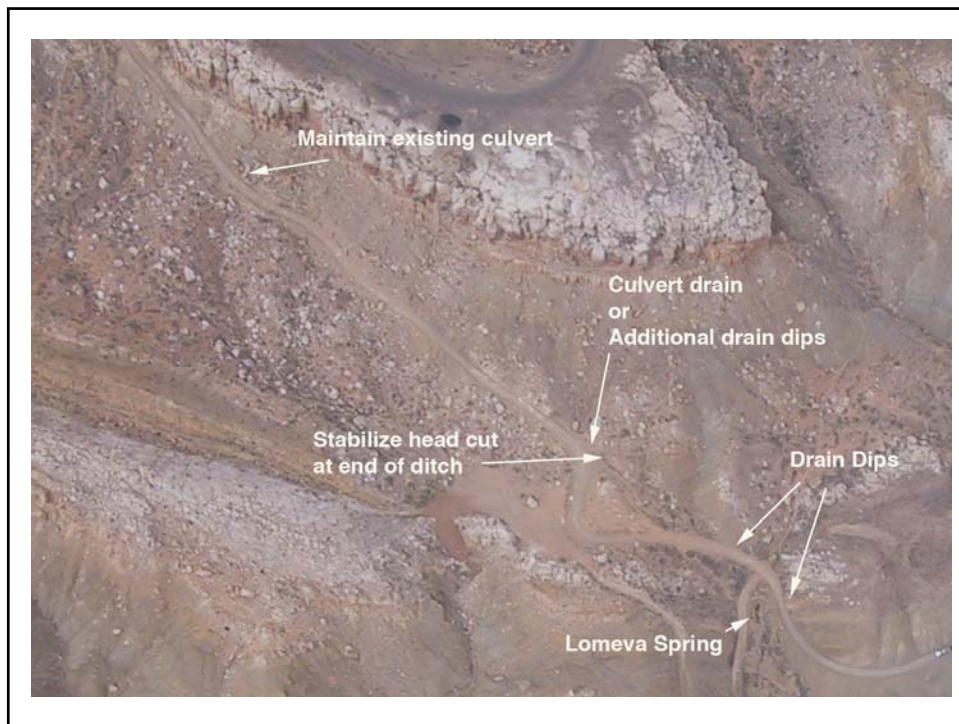


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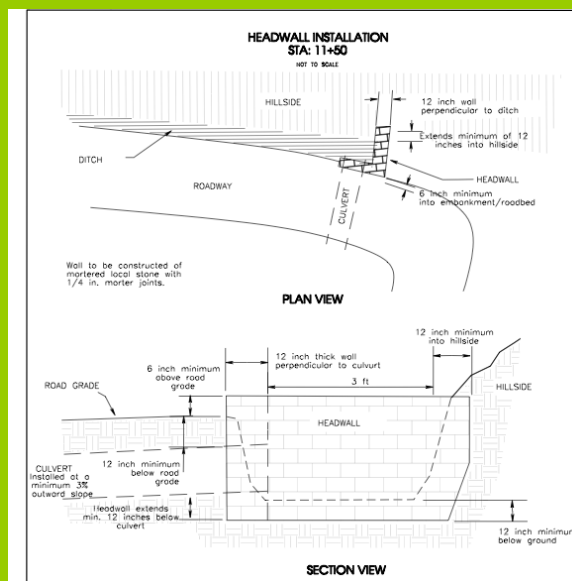


Drain Dip Detail





Culvert Cross Drain Detail





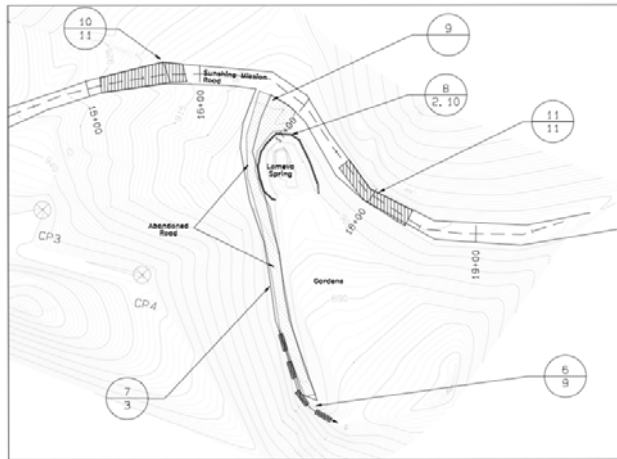


Problem

- Abandoned road is providing a conduit for unimpeded runoff



Solution



Rip and reseed
abandoned
road to slow
runoff and
promote
infiltration



Re-vegetate with native grass and forbs

Species	Scientific Name	% of Mix	Seeding Rate	Seeding Rate	Seed Mix
			lb PLS/acre for Pure Stand*	lb PLS/acre for Desired Comp	lb PLS for 1.5 acres
GRASSES					
Indian ricegrass	(Oryzopsis hymenoides)	20%	18	3.60	5.40
Alkali sacaton	(Sporobolus airoides)	10%	6	0.60	0.90
Galleta grass	(Pleuraphis jamesii)	15%	18	2.70	4.05
Blue grama	(Bouteloua gracilis)	25%	6	1.50	2.25
Sand dropseed	(Sporobolus cryptandrus)	10%	4	0.40	0.60
SHRUBS					
Fourwing saltbush	(Atriplex canescens)	10%	3	0.30	0.45
Mormon tea	(Ephedra viridis)	5%	2	0.10	0.15
Big rabbitbrush	(Chrysothamnus nauseosus)	5%	2	0.10	0.15
TOTAL		100%		9.30	13.95

* Planting to be done by hand broadcasting, values have been increased by a factor of 2.



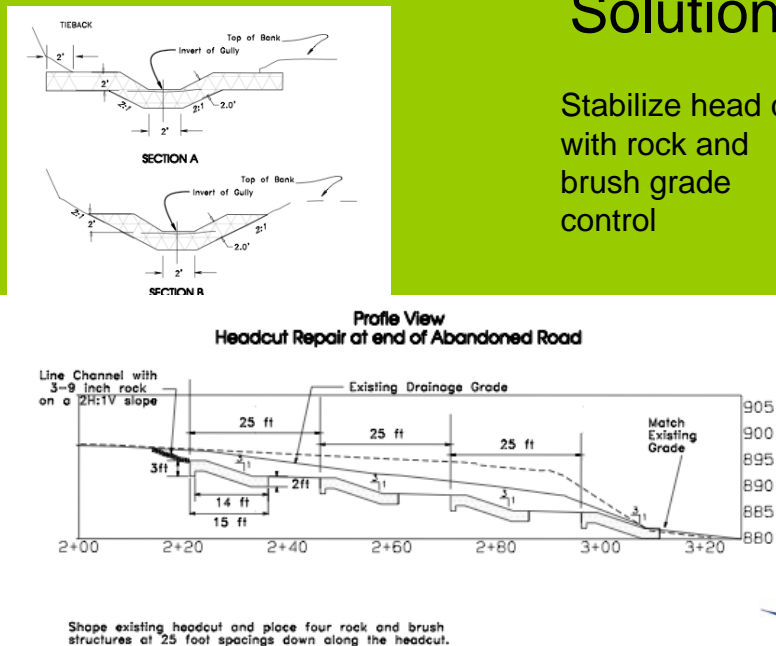
Problem

- Head cut working its way toward spring



Solution

Stabilize head cut with rock and brush grade control









Acknowledgments

- U.S. Environmental Protection Agency
- Region 9 Project Officer Wendell Smith
- Hopi Tribe Water Resources Program
- Hopi Villages of Mishongnovi & Sipaulovi
- Robert Mahkewa
- Robert Harris and the Mishongnovi stonemason crew
- Natural Channel Design, Inc.

